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When Will India Achieve Universal Adult Literacy : Status and Prospects

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Abstract

The present paper examines status and disparities across sub-population groups distinguished by location, gender and caste, and across, states with respect to literacy. It also explores the prospects of literacy rate in India with a modelling of simulation exercise while considering different policy interventions. In this respect it is observed that the performance of India in literacy rate is relatively poor. The progress in the literacy rate especially during the last decade is decelerated when compared to that of the previous decade. Again, rural-urban differences, gender gaps and social group disparities and regional variations across states continue to persist. The initiative for improving literacy rate through informal/non-formal adult education programmes especially in the context of National Literacy Mission and its initiative of Total Literacy Campaign (TLC) yielded very poor results. With respect to the prospects of India in meeting the EFA goal related to adult literacy are not so encouraging. It would require greater policy attention and better initiative for the improvement of adult literacy. Our simulation exercise has shown that the impossibility of achieving 100% literacy rate in the near future for the country unless there is a policy intervention through adult education programme. The exercise indicates the need for rejuvenating the National Literacy Mission (NLM) and revamped adult literacy programmes of TLC and PLP.

Key Words: Literacy, Adult Literacy, India

JEL Classification: I20

When Will India Achieve Universal Adult Literacy : Status and Prospects

Motkuri Venkatanarayana*

Introduction

India is considered as one of the emerging economic super powers in the changing global scenario. It is viewed against the recent high growth trajectory of the Indian economy. However, its achievements in human development indicators still lagging behind those countries against which the country's economic growth is competing – for instance China. Also, India's position in human development ranking falling behind some of the countries whose economic growth relatively poorer – for instance Bangladesh. Within the country there are huge variations with respect to economic and human development indicators across states and across regions/districts within the states.

One of the factors that is necessary in sustaining the high economic growth trajectory of a country is its human capital base. In other words it is the educational levels of its population. The crucial role that education development plays in the growth process of an economy is well established (see Barro, 1997; Barro and Sala-i-Martin, 2004; Psacharopoulos, 2006). Moreover, the informed citizenry which facilitates the better governance, active citizenship and collective actions are critical for the functioning of civil society especially in a democracy. The vehicle through which these are made possible is education. In this context, necessity of further educational development is emphasised to unravel the growth potentials of the Indian economy (Mehrotra *et. al.*, 2005). Moreover, education enhances the functioning of an individual better (see Sen, 1999).

Literacy and basic education are crucial for the human as well as economic development. India is one of the developing countries which are having historical trend of low levels literate rates. In spite of the India's remarkable performance in terms of the child schooling (i.e. school attendance rate) especially since 1990s, its performance in literacy rate is relatively poor. It is because of the large stocks of illiterate population in the country,

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especially in the adult and older age groups who are ignored, so far, for the policy measures. The latest Census 2011 provisional data indicates that still around one-fourth of its population in the 7+ age group are illiterates. The recent UNESCO's Education for All Global Monitoring Report 2012 indicates that out of the total 775 million adult illiterates in the globe in 2010, 37% of them are located in India; China's share is only 7% (UNESCO, 2012).

India was the signatory participant in World Conference on Education for All (EFA) held in 1990 at Jomtien and the World Education Forum held in 2000 at Dakar. In this respect India has committed to resultant Declarations particularly Education for All and achieving six goals of the declaration. Of the six goals, the fourth-one is about achieving improvement in adult literacy 50% better by 2015 than the base in 2000. But the current progress in literacy rate in India particularly during the last one decade indicates meeting the fourth goal is very difficult, if not impossible. Therefore, the policy concern is about the prospects of literacy and the policy intervention required for accelerating the progress in literacy rate in general and adult literacy rate in particular, in India.

In this context, it is to examine status and disparities across sub-population groups distinguished by location, gender and caste, and across, states with respect to literacy. It also explores the prospects of literacy rate in India with a modelling of simulation exercise while considering different policy interventions. The paper is organised as follows. Section I below presents the status of literacy levels in India and the Section II presents the prospects of the literacy in India. Section III discusses on policy initiatives and issues with respect adult education programmes. Finally, concluding observations and remarks follows.

I Literacy Levels in India

With respect to the literacy rate, there is a significant improvement over a period in India. However, the latest Census 2011 provisional figures show that about three-fourths of the population in the country are literates and the rest one-fourth still remained as illiterates. Over a period especially since 1961, the progress in overall literacy rate in the country was the highest ever during the 1990s (12.6 percentage points increase between 1991 and 2001). Thereafter, there is a decelerating progress in literacy rate during the last decade (between 2001 and 2011) wherein the improvement in the literacy rate of the country was around 8 percentage points which is considerably lower the progress observed in the previous decade.

Again, there exists rural-urban difference, gender gaps, social group disparities and regional variations across states/districts in literacy levels within the country. There are huge rural-urban differences in literacy rate although differences are reducing over time. The literacy rate in urban India was almost three times higher than that of the rural India in 1951, the ratio of urban to rural in terms of literacy rate had gradually reduced to around two in 1981 and further to 1.24 in 2011. Still the rural urban difference in literacy rate is about 16 percentage points in 2011. Such a rural-urban difference is relatively high among the females (21 percentage points).

Similarly, although the gender gap in literacy rate in the country is narrowing down as a result of the faster improvement in female literacy rate over a period over their male counterparts. The male literacy rate was almost three times higher than that of females in 1951. A gradual reduction in gender gap brought down the ratio of male to female in terms of literacy rate, to 1.9 in 1981 and further to 1.25 in 2011. Nevertheless, the gender gap in literacy rate is still considerably high at around 16 percentage points in 2011. Such a gender gap is further higher in the rural areas (19 percentage points).

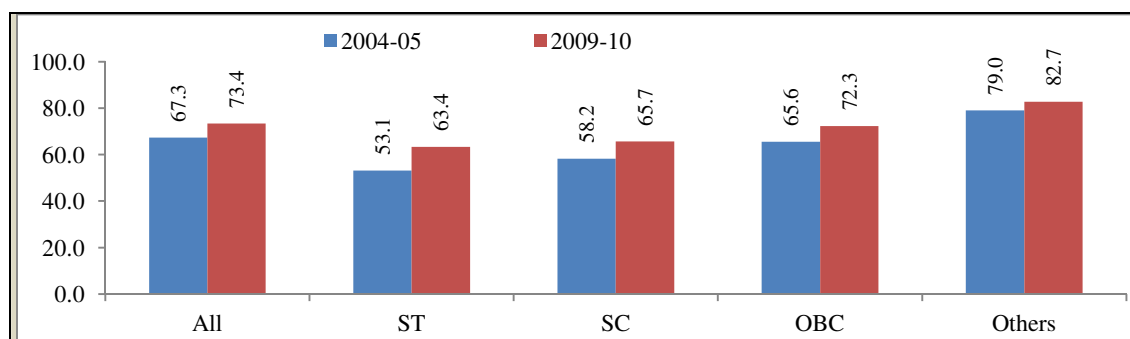
Table 1.1: Literacy Rate in India by Gender and Location

Year	Rural and Urban			Rural			Urban		
	Person	Male	Female	Person	Male	Female	Person	Male	Female
1951	18.33	27.16	8.86	12.10	19.02	4.87	34.59	45.06	22.33
1961	28.30	40.40	15.35	22.50	34.30	10.10	54.40	66.00	40.50
1971	34.45	45.96	21.97	27.90	48.60	15.50	60.20	69.80	48.80
1981	43.57	56.38	29.76	36.00	49.60	21.70	67.20	76.70	56.30
1991	52.21	64.13	39.29	44.69	57.87	30.62	73.10	81.09	64.05
2001	64.84	75.26	53.67	58.74	70.70	46.13	79.92	86.27	72.86
2011	72.99	80.89	64.64	67.77	77.15	57.93	84.11	88.76	79.11

Note: 1. Literacy is for 5 + age population till 1971 and thereafter since 1981 for 7 + age population.

Source: Census of India.

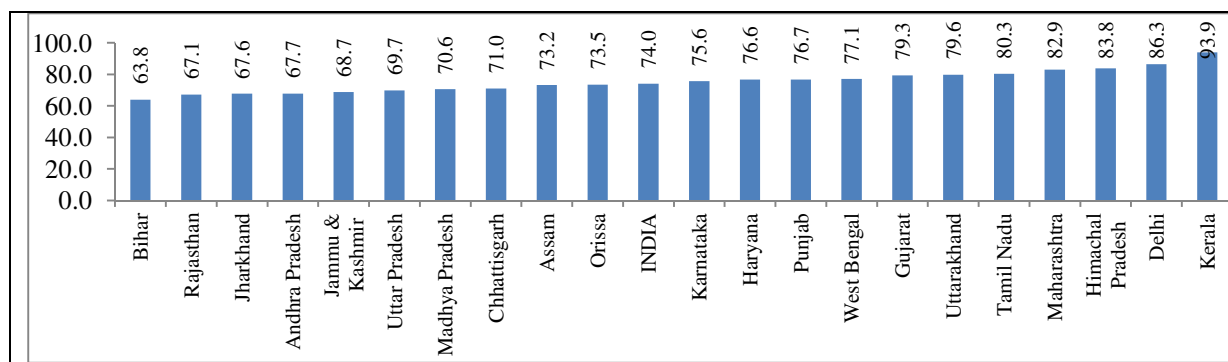
Across social groups, disparities in literacy rates continue to persist (Figure 1.2). In 2009-10 around one-third each of the ST and SC population (7+ years age) in the country are found to be illiterates. The illiteracy is considered to be one of the important factor that perpetuating the historical disadvantages of these backward communities.

Figure 1.2: Literacy Rate (%) in India by Social Groups

Note: Literacy rate for 7 + age population.

Source: Estimated using NSSO 61st (2004-05) and 66th (2009-10) Round Employment and Unemployment Survey unit record data.

Across major states, there is huge variation in literacy rate among the 7 years and above age population (see Figure 1.1). According 2011 Census data, the highest literacy rate (94%) is observed in Kerala followed by Delhi, Himachal Pradesh, Maharashtra and Tamil Nadu. The lowest literacy rate (64%) is observed for Bihar followed by Rajasthan, Jharkhand, Andhra Pradesh and Jammu and Kashmir. There is almost 30 percentage points difference between the highest and the lowest literacy rates across major states.

Figure 1.1: Literacy Rate (7 + Age group) across Major Indian States, 2011

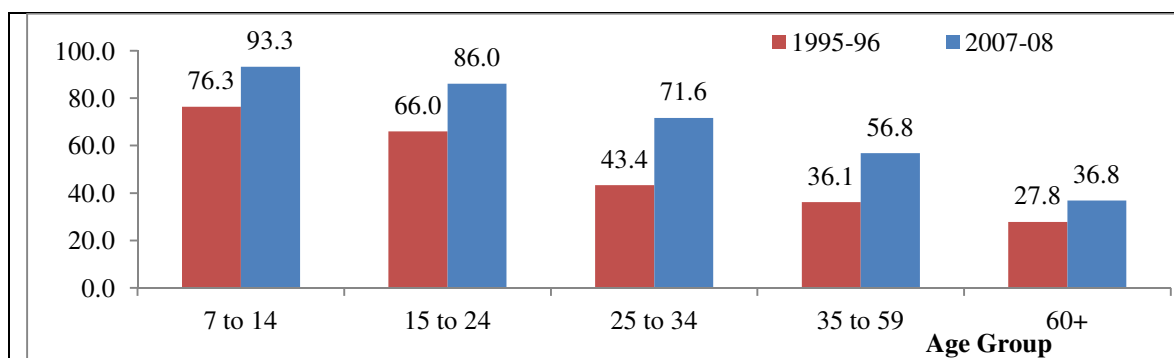
Note: 1. Literacy Rate – percentage of literates to the 7 + age population; 2. States are ordered by the rank in terms of literacy rate.

Source: Census of India, Census 2011 Provisional Data.

Illiterates are heavily concentrated in highly populated and educationally backward states like Uttar Pradesh, Bihar and Rajasthan as they are having lower literacy rates. Uttar Pradesh and Bihar while accounting for one-fourth of the total population of India in 2011, they host around one-third of total illiterates in the country. If these two states are joined with Madhya Pradesh and Rajasthan they together account for 45% of the total illiterates in India.

The literacy rate again varies across age groups of population. When examined the age group specific literacy rate it can be observed that the literacy rate in India declines while moving to subsequent higher age groups. Moreover, the improvement in the literacy rate over the period is relatively higher among the younger age groups than that of the adults and older people (Figure 1.3). The share of literates in younger age to the total literates is higher than their proportion in the total population (Table 1.2). Correspondingly, the contribution of adults and older age group literates to the total literates in India is lower than their proportion in the total population. The lower levels literacy among adults and older age groups in India indicates the historical neglect of primary education. By ensuring primary education available to all children of school age, the fresh flow of illiterates can be arrested (Bordia and Kaul, 1992).

Figure 1.3: Improvement in Literacy Rate (%) across age groups in India



Note: Age group specific literacy rates.

Source: Estimated using unit record data of NSS 52nd (1995-96) and 64th (2007-08) Rounds of Survey on Literacy and Participation in Education (Sch. 25).

Table 1.2: Percentage Distribution of Population and Literates by Broad Age Groups in India

Age Group	Distribution of Population		Distribution of Literates	
	1995-96	2007-08	1995-96	2007-08
7-14	19.1	17.9	29.8	27.2
15-24	16.4	18.0	24.3	25.3
25-34	17.0	16.1	19.4	18.8
35-59	23.4	26.2	22.4	24.3
60 +	6.4	7.3	4.1	4.4

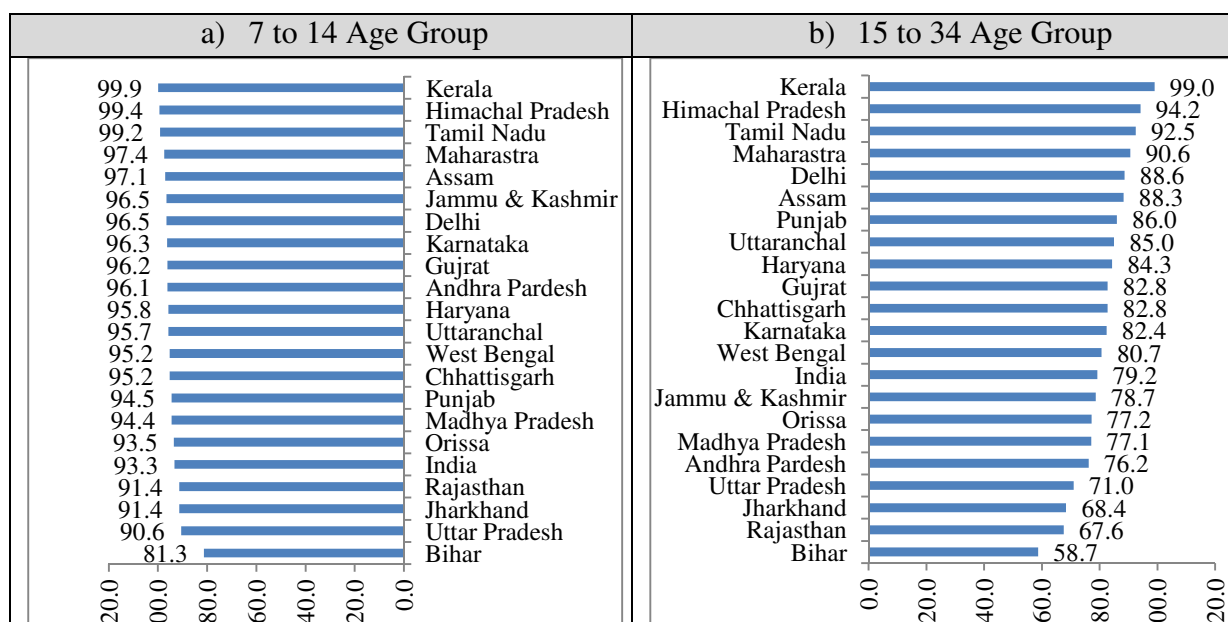
Note: Figures presented are percentages.

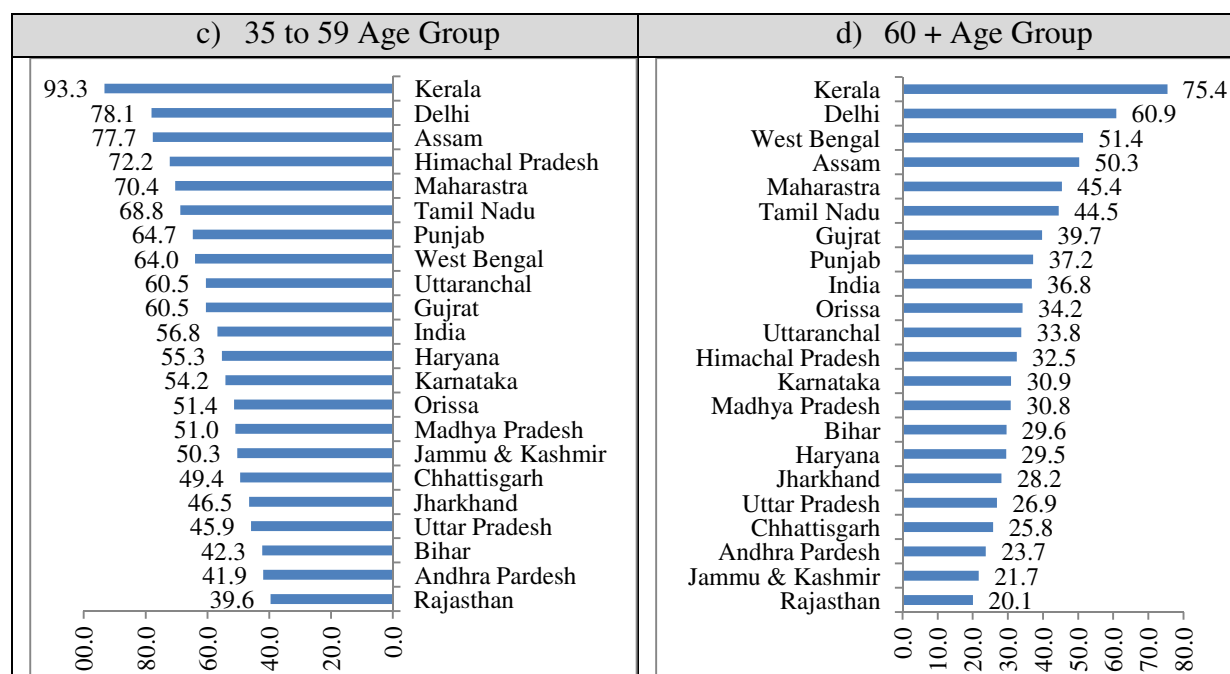
Source: Based on the unit record data of NSS 52nd (1995-96) and 64th Round (2007-08) Surveys on Literacy and Participation in Education (Sch. 25).

Disparities in Age-Specific Literacy Rate across Major States

Age-specific literacy rate across states shows that the variation literacy rate across states among the 7-14 years age group is the least when compared to the subsequent higher age groups (Figure 1.4 - a, b, c & d). The variation across major states in terms of literacy rate increases with the subsequent higher age groups. Kerala stands top and Bihar stand at the bottom among the 21 major states in the first two prime age groups (7-14 and 15-34). For the next two age groups (35-59 and 60 and above) although Kerala remains at the top, the bottom place changed wherein instead of Bihar it is the state of Rajasthan which is having the lowest literacy rate among the major states. It indicates that the recent policy efforts under the initiatives of DPEP and subsequent SSA with respect to elementary schooling in India have narrowed down the variations across states and thereby literacy rates among the younger age group. But there has not been much policy attention towards narrowing down the historical sharp variations across states in the levels of school education particularly primary schooling in which an individual can acquire literacy skills. It is a historical policy neglect of illiterate individuals living in educationally backward states. There was an effort under the New Education Policy of 1985 and the consequent establishment of National Literacy Mission (NLM) in 1988. The initial intensity and enthusiasm of the Total Literacy Campaign (TLC) initiated in 1989 under the Mission (NLM) in order to provide illiterate adults the second chance of acquiring literacy skills through informal adult education programmes, has dried up over a period.

Figure 1.4: Age Specific Literacy Rate across Major States in India, 2007-08





Note: Age specific literacy rates.

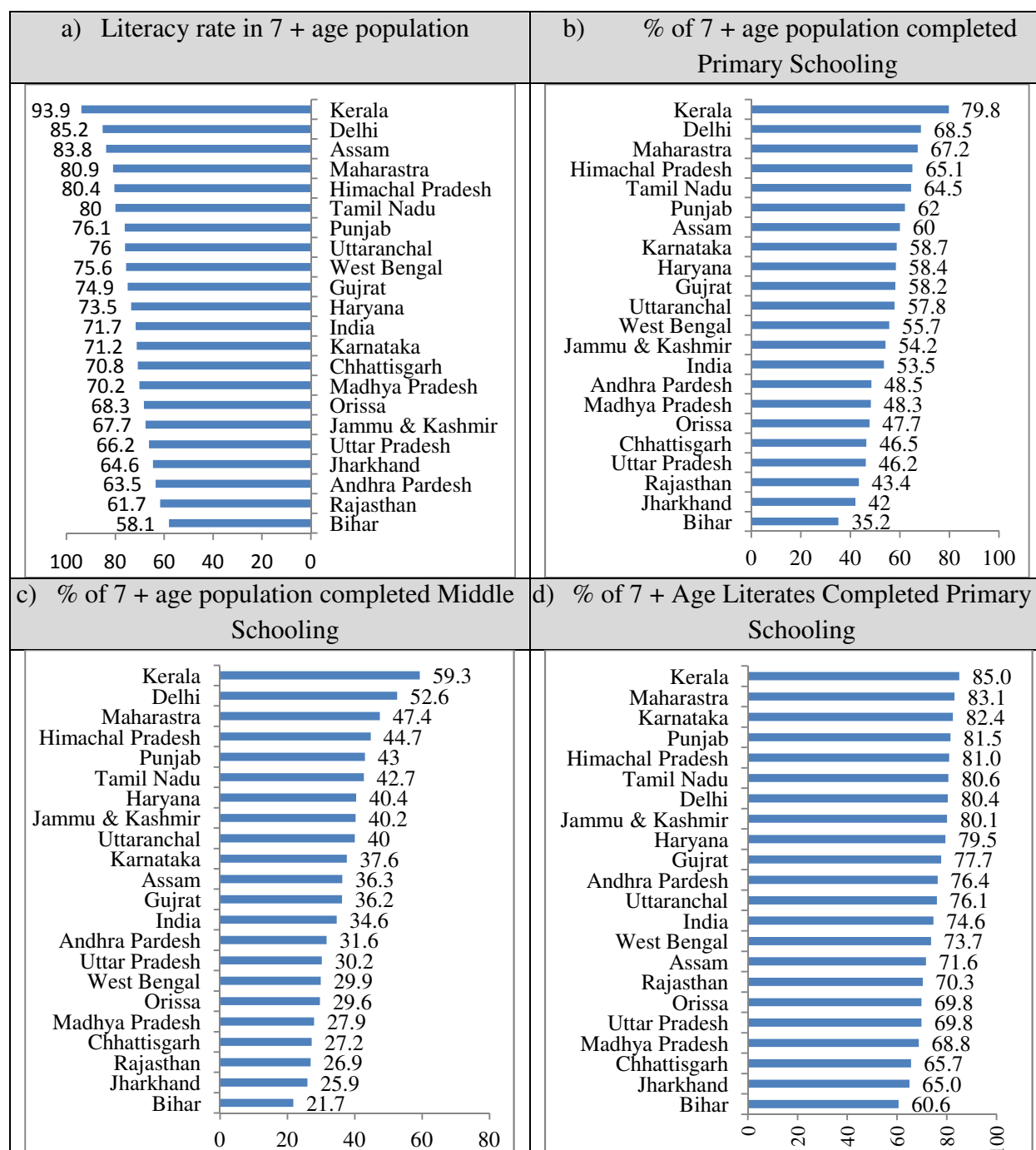
Source: Based on the unit record data of NSS 64th Round (2007-08) Surveys on Literacy and Participation in Education (Sch. 25).

The recent policy effort in universalising elementary education and the consequent progress could not undo the historical variations schooling levels of the population across states. With respect to the schooling levels of population, it is observed that a little above half of the population in India in the age 7 year and above had completed primary schooling in 2007-08. Variations across states are considerable wherein there is a 50 percentage points gap in state-specific primary completion rates. While Kerala stands top with about 80 per cent of its 7+ years age population have completed primary schooling, Bihar stands at the bottom with only 35 per cent for the similarly age group who completed primary schooling. In terms of middle schooling, the percentage completed is the highest (59%) in Kerala and the lowest (22%) in Bihar while the national average is 34.6%, only one-third of the population (7+ year age) in India have completed middle schooling.

When examined quality of literacy in terms of percentage of literates who have at least completed primary schooling which is almost equivalent with functional literacy (see UNESCO, 2005), only about three-fourth of the literates in the country (in the 7+ years age group) have completed primary schooling in 2007-08 (Figure 1.5d). There are huge variations across states in this respect too. While Kerala state is having the highest (85%) percentage of its literates completed primary schooling, Bihar state is having the lowest (61%) as expected. There is about 24 percentage points gap in state-specific percentage of literates who

completed primary schooling. It indicates that variations across state in functional literacy would be more intensive over a simple literacy rate.

Figure 1.5: Schooling Completion Rate (in 7 + Age Population) across Major States in India, 2007-08



Note: Age specific literacy rates.

Source: Based on the unit record data of NSS 64th Round (2007-08) Surveys on Literacy and Participation in Education (Sch. 25).

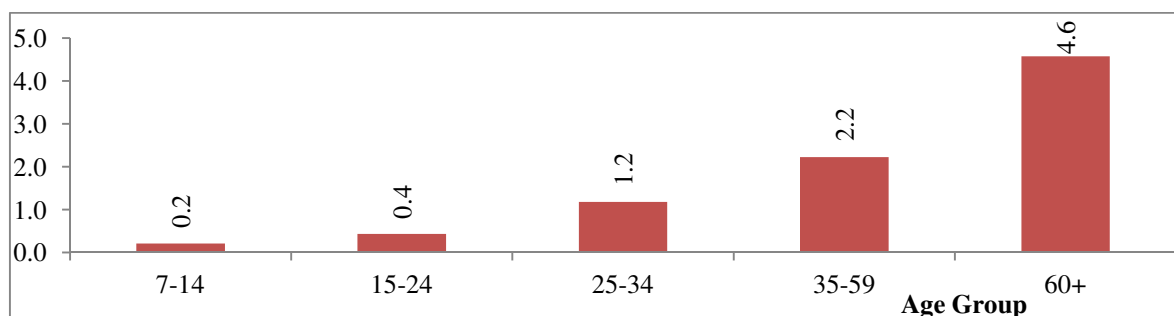
Literacy through Informal or Non-formal Adult Education Mode

There are different means i.e. formal schooling, informal or non-formal educational programmes that impart basic literacy skills (reading, writing and numeracy) to transform an individual to become a literate. Formal schooling is the most common mode to acquire such base literacy skills. But, in this mode the chances of acquiring literacy skills through formal schooling are higher for younger ages and such chances cease to exist with growing age. When formal schooling is the only means of acquiring literacy skills, the literacy rate observed for an younger age cohort remains same throughout the cohort's life time, if one assumes mortality rate among the literates and illiterates in that age cohort is same.

The other mode of acquiring literacy skills is through the informal or non-formal adult education programmes. Such initiatives have been there in many countries all over the world. In India too there have been such initiatives; particularly the establishment of National Literacy Mission (NLM) in 1988 and its Total Literacy Campaign (TLC) initiated in 1989 is the largest initiative in terms of its spread all over the country. In this mode, there is age relaxation in participating and acquiring literacy skills. It provides a second chance for the adults to acquire such literacy skills for the illiterates in any particular age cohort who missed the first chance of acquiring literacy skills when they were young. With such initiatives, depending on the programme intensity and participation rate, age-specific literacy rates can be improved over time, even if we assume mortality rate remains same for the literates and illiterates.

To examine impact of such adult literacy programmes in India, it can be observed the percentage of those literates who have become literates (acquired literacy skills) through informal ways, non-formal educational programmes or adult literacy programmes to the total literates in the country are very marginal (below one percent among 7 + years age literates). When we refer it as the percentage of literates without formal schooling, it is increasing although marginally while moving to subsequent older cohorts. The percentage is the higher (around 4.6%) among the older age groups (60 + years age population) (Figure 1.6). It might be indicating a pointer that the intensity and performance of such programmes of adult literacy/education in India particularly the National Literacy Mission over time is below or not as much as once it was. It also indicates that adult literacy programmes implemented in India have become ineffective in raising adult literacy rates particularly in the recent past.

Figure 1.6: % of Literates without Formal Schooling (through Informal/Non-formal Education) to the Total Literates in India by age groups, 2007-08



Note: 1. Age group specific percentages; 2. Informal/Non-Formal Education includes Total Literacy Campaign (TLC), NFEC, AIEP, AEC, and others.

Source: Based on the unit record data of NSS 64th Round (2007-08) Surveys on Literacy and Participation in Education (Sch. 25).

Adult Literacy: Would India be able to meet EFA 4th Goal?

Having said, if one examines whether India would be able to meet the 4th Goal of Education for All (EFA) initiative, one can say it is very difficult if not impossible. The EFA initiative's fourth goal is about improving adult literacy rate (ALR) 50% better by 2015 over the base in 2000. In this respect, if we examine historical trend, it in fact indicates an accelerating progress in adult literacy rate till 2001 and the rate of improvement was the highest between 1991 and 2001. Nevertheless, even if the decade 1990s' rate of improvement replicates for the period between 2000 and 2015, achieving EFA target is not possible.

To set the base year (2000) value, the percentage points of improvement in adult literacy rate per annum, during 1990s is taken into account and set at 59.7% for the year 2000. In order to meet the EFA goal of 50% improvement by 2015 over the base, the target of India is that it has to achieve the adult literacy rate at 89.6%. It means that the adult literacy rate in India has to be accelerated at 2% percentage points per annum during the period between 2000 and 2015. It also means that whatever the rate the adult population may grow during 2000-15, but the rate of growth for adult literates must be 2.7 times higher than that of adult population during the period. Whereas, the rate of improvement observed during 1990s was at 1.28 percentage points per annum. Such a rate of improvement in adult literacy if replicated for the period 2000-15, India can achieve adult literacy rate a maximum of 80% which is equal to 34% improvement over the base. But, the rate of improvement observed for the 1990s decade, whether it can be sustained for the period 2000-15 is a matter of concern.

In this respect, we are yet to obtain literacy rates for adult population for the year 2011 from the Census of India, to examine the rate of improvement in adult literacy rate during 2001-11. Notwithstanding, one can consider NSSO's Employment and Unemployment survey estimates, alternatively. Although it may not be proper to compare the NSS estimates and Census figures to see the progress, one can figure out the rate of improvement between two rounds of NSS. Having said, if we examine the rate of improvement in the last half-a-decade period between 2004-05 and 2009-10 it is about 1.42 percentage points per annum. If this rate of improvement is replicated during 2000-15, the adult literacy in India would be a maximum of 82.3% by 2015 and it is equal to 38% improvement over the base. It gives a better prospect but still falls short of the EFA goal target. It indicates the country needs greater policy attention and better initiatives towards improving adult literacy rate.

Table 1.3: Adult (15+ Age) Literacy Rate in India

Year	Female	Male	Persons
Census of India			
1961	13.2	41.5	27.8
1971	19.4	47.7	34.1
1981	25.7	54.9	40.8
1991	33.7	61.6	48.2
2001	47.8	73.4	61.0
NSSO based Estimates			
2004-05	49.6	73.6	61.8
2009-10	58.3	79.0	68.9
Author's estimates to reflect on EFA base and target			
2000 – Base	46.4	72.2	59.7
2015 - Target	69.6	100	89.6

Note: Adult Literacy – for the 15 years above age population.

Source: 1. Census of India; 2. NSSO-EUS unit record data; 3. Author's Estimates.

To sum up the above analysis in the section I, it is observed the poor performance of India with respect to literacy rate. The progress in the literacy rate especially during the last decade is decelerated when compared to that of the previous decade. There are rural-urban differences, gender gaps and social group disparities and regional variations across state in terms of literacy rate. Although disparities in literacy rate across these sub-population groups are getting narrowed over time, they still found to be considerably high. The recent policy initiatives with respect to primary schooling have reduced disparities in literacy rate among the young across states but the dearth of policy attention towards the historical trend of disparity in literacy rate among the adults, left it to continue. The initiative for improving literacy rate through informal/non-formal adult education programmes especially in the

context of National Literacy Mission and its initiative of Total Literacy Campaign yielded very poor results. Moreover, such initiative has become ineffective over time in improving literacy rate. Finally, when we examine the prospects of India in meeting the EFA goal with respect to adult literacy, the scenario emerged is not so encouraging. It would require greater policy attention and better initiative for the improvement of adult literacy. In this context, an attempt is made in following section to explore the impact of certain policy intervention, if initiated, on the prospects of literacy while given a certain determinant demographic factors.

II Prospects of Literacy in India

In this section we present the variants of literacy rate projection models involving a policy variable and demographic factors. It is an attempt to explore the prospects of literacy rate for India through the simulation exercise.

Demographic Factors affecting literacy rate

One must also note the demographic factor i.e. age specific mortality rate as important factor that affects the literacy rate in general age specific literacy rate in particular. In other words, if the mortality rate is higher among the illiterates than that of literates, rate of growth in literates would be higher than that of illiterates. The literacy rate as result of such demographic factor increases. The case is other way round when the mortality rate is higher among the literates than that of illiterates, literacy rate declines. Similarly, for a particular age cohort in its transit across different age structures, if the mortality rate is higher among literates when compared to illiterates in that cohort, the literacy rate of the cohort declines and vice versa - i.e. if the mortality rate is higher among the illiterates when compared that of literates, the literacy rate in that age cohort increases. In this respect, the increase or decline in the age specific literacy rate in a particular age cohort purely is a demographic effect. However, we don't have sufficient information on age specific mortality rates among literates and illiterates.

Besides, the factor of migration especially external migration wherein the literacy levels of the net migrants do affects the overall literacy rate of a country/state/region. If the net migration is positive indicating surplus of in-migrants over out-migrants and the literacy level are higher (lower) among these net in-migrants than that non-migrant population then the overall literacy rate improves (declines). If the net migration is negative indicating the out-

migrants and the literacy level are lower (higher) than non-migrant population then the overall literacy rate improves (declines). But it all depends on size of the migrants and its share in the population. In India, however, the share of external migrants in the total population is small (below 1%) so that the literacy status of net migrants may not significantly affect overall literacy rate in the country.

Policy Initiatives and Literacy

As mentioned elsewhere above, there are different means i.e. formal schooling, informal or non-formal educational programmes that impart basic literacy skills. Formal schooling is the most common mode. The other means are informal/non-formal modes of adult education programmes which are complementary and provide second chance of acquiring literacy skills for those who have missed the first chance through formal schooling when they were young. All these means are associated with the policy initiatives.

Assumptions

For population projections birth rate continues to decline beyond our base years but the age-specific mortality rate of base year continues to prevail during our projection period. With respect to literacy projection, the basic assumption of the literacy model is age-specific mortality rate is same among both the literates and illiterates of that age group. With respect to external migration (in or out), the literacy rate among the net migrants is equal to that of the non-migrant population. Besides, these basic assumptions, the other assumptions along with policy variable prescriptions considered for the simulation exercise are specified in the Table 2.1.

Source of Data for the Base Year

We have used RGI projections based on 2001 Census data for the age group-wise population. With respect to age-specific mortality rate we have used SRS estimates for the year 2008. As regards the age-specific literacy rate, we have used our estimates using unit record data of NSSO 64th round (2007-08) survey on Literacy and Participation in Education (Sch. 25).

Projection Models

Both the population and literates projections are made using following simulation model by taking year 2008 as the base year for the required parameters. The model specifications are as follows.

Age Group Specific Population projection model specification:

$$P_{i,j} = \{[(P_{i-1,j-1})/Z_i] \cdot (Z_{i-1} - (Z_{i-1} - 1))\} + \{(P_{i,j-1} - (M_i \cdot P_{i,j-1})) \cdot (Z_i - 1)\} \quad \dots\dots\dots (1)$$

Age Group Specific Literate population projections model specification – Without any policy intervention:

$$L_{i,j} = \{[(L_{i-1,j-1})/Z_i] \cdot (Z_{i-1} - (Z_{i-1} - 1))\} + \{(L_{i,j-1} - (M_i \cdot L_{i,j-1})) \cdot (Z_i - 1)\} \quad \dots\dots\dots (2)$$

Age Group Specific Literate population projections model specification – With policy intervention in school education and in terms of adult literacy programmes:

$$L_{i,j} = \{[(L_{i-1,j-1})/Z_i] \cdot (Z_{i-1} - (Z_{i-1} - 1))\} + \{(L_{i,j-1} - (M_i \cdot L_{i,j-1})) \cdot (Z_i - 1)\} + [PI_{i,j}] \quad \dots (3)$$

$$PI_{i,j} = (x_{i,j} \cdot ILP_{i,j})$$

P – Population; L – Literates

PI – Policy Intervention i.e. Number of Illiterates made as Literates through PI

ILP – Illiterate population;

x – Percent of Illiterates targeted for literacy programme

i - ith age group (0-6, 7-9, 10-14, 15-19,, and 75 +)

j – jth Year (2008, 2009, 2050)

Z – age-group interval (mostly 5 years age interval except 0-6, 7-9 and 75+ age groups)

M – Age specific death/mortality rate (ASDR) of population (based on SRS)

i-1 and j-1 refer to immediate precedent age group and year

Given the projections of population and literates by age groups, the age specific literacy rates (ASLR) can be simply computed as:

$$ASLR_{i,j} = L_{i,j} / P_{i,j} \cdot 100 \quad \dots\dots\dots (4)$$

Finally the overall literacy is the summation of age-specific literacy rates:

$$LR_{(7+ pop),j} = \sum_i^n ASLR_{i,j} \cdot SP_{i,j} \quad \dots\dots\dots (5)$$

ASLR – Age-specific Literacy Rate

LR – Overall Literacy Rate

SP – Share of the 'i'th age group in the total population

Having specified the simulation models, there are five variants of simulation model are programmed. The basic motive and specificities of each one of five variants are as follows.

Variant I – It is status quo situation wherein there is no new policy intervention programmes to improve literacy levels in the country, whatever are there they will continue. The other assumptions that applies to Variant I simulation model are presented in the Table 2.1.

Table : 2.1: Assumption of the Simulation Models

Sno	Assumption	Variants of Simulation Models				
		I	II	III	IV	V
1	0-6 years age population continue to decline over a period of time as the current (negative) rate of growth (i.e. between 2001-2011) indicates.	YES	YES	YES	YES	YES
2	Age specific mortality (death) rates of the population are applied to both the literates and illiterates in the relevant age group, without difference.	YES	YES	YES	YES	YES
3	Equal distribution of population within the age group cohort	YES	YES	YES	YES	YES
5	Within the age group cohort same literacy rate for each single year age cohorts.	YES	YES	YES	YES	YES
7	Literacy level of the net migrants is same as that of the non-migrants.	YES	YES	YES	YES	YES
4	Literacy rate within the age group cohort is freezed.	YES	YES	NO	NO	NO
6	There is near impossibility of a person acquiring literacy skills once he/she moves out of 7-9 age group brackets.	YES	NO	NO	NO	NO
8	Literacy rate within the younger age groups (especially for the 7-9 and 10-14 age groups) will improve from the current levels of around 96%.	NO	YES	YES	YES	YES
9	The literacy rate of 96% among the 7-9 and 10-14 age group will grow at 5% per annum till it reaches 100%.	NO	YES	YES	YES	YES
12	There is no chance of a person acquiring literacy skills once he/she 14 years age group bracket.	YES	YES	NO	NO	NO
13	10% of the illiterates in the age group 15-35 years will be targeted under adult literacy programme and thus they will be made as literates.	NO	NO	YES	NO	NO
14	The chance of acquiring literacy skills for those illiterates in the age group 15-35 opened with a policy intervention through adult literacy programmes.	NO	NO	YES	YES	YES
15	There is no chance for an illiterate person acquiring literacy skills once he/she cross 15-35 years age group bracket.	NO	NO	YES	YES	NO
16	20% of the illiterates in the age group 15-35 years will be targeted under adult literacy programme and thus they will be made as literates.	NO	NO	YES	YES	YES
17	5% of illiterates in the 35-60 age group per year till no illiterate in the age group left out, will be made literate in 2012.	NO	NO	NO	NO	YES
18	After 2012 the percentage of illiterates in the 35-60 age group who will be targeted for the adult literacy programmes will increase from the base 5% in 2012 at a rate 5% per annum till no illiterate in the age group left out.	NO	NO	NO	NO	YES

Source: Author's.

Variant II – In this simulation model policy intervention programmes in the school education of 5-14 years age group is assumed to improve literacy levels in India. The assumptions of the Variant II simulation model are presented in the Table 2.1.

Variant III – In this simulation model policy intervention through adult literacy programmes especially for the 15-35 years age group along with policy intervention programmes in the school education of 5-14 years age group is assumed to improve literacy levels in India. The assumptions of the Variant III simulation model are presented in the Table 2.1.

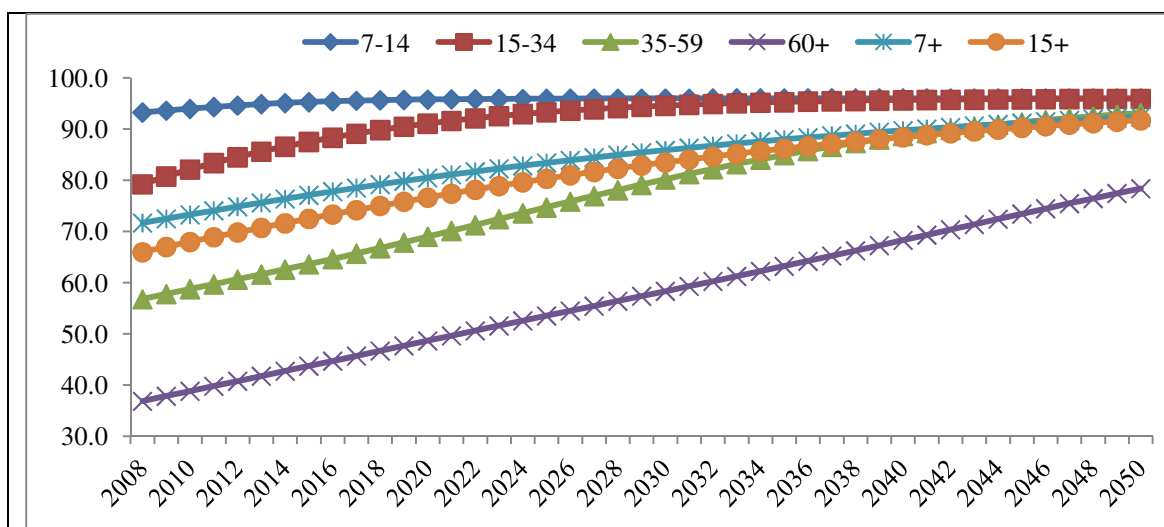
Variant IV – It is similar to the Variant III. In this simulation model also policy intervention through adult literacy programmes especially for the 15-35 years age group along with policy intervention programmes in the school education of 5-14 years age group is assumed to improve literacy levels in India. But the rate at which the percentage of illiterates in the 15-35 age group who will become literates through adult literacy programmes will be higher. All the assumptions of the Variant III remain constant in this simulation model but the rate at which the percentage of illiterates in the 15-35 age group who will be made literates through adult literacy programme would vary (see Table 2.1).

Variant V – In this variant of simulation model the policy intervention through adult literacy programmes is applied to 35 to 60 years age group along with 15-35 age group and the policy intervention programmes in the school education of 5-14 years age group, is assumed to improve literacy levels in India. In this variant of simulation all the assumptions of the Variant IV remain constant. Besides the other assumptions are related to rate at which the number illiterates in 35-60 year age group will be made literates (see Table 2.1).

Projection Results

Based on the above models and model specific assumption, projection results for all India can be summarised as below.

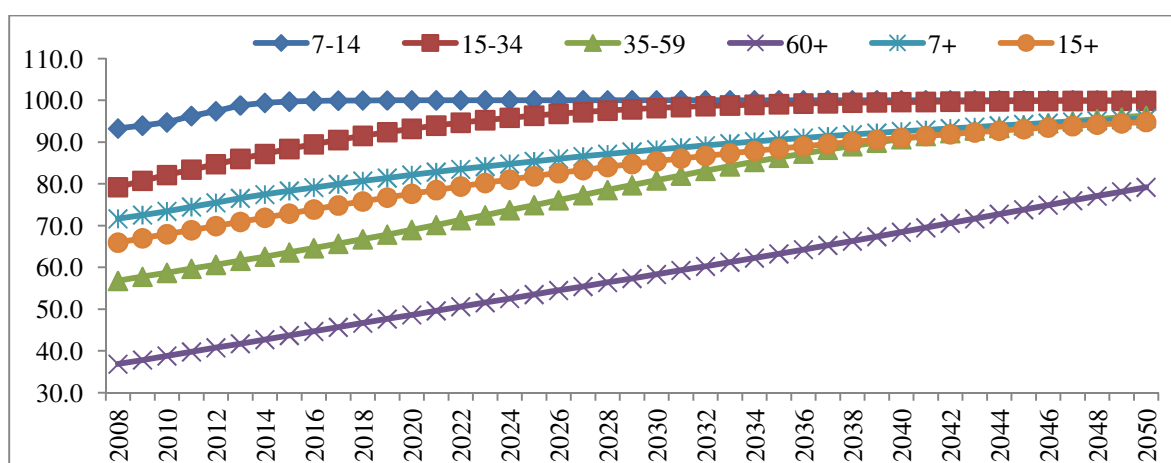
The trend in the projected literacy rate for India till 2050 based on the simulation model Variant I which is about without any policy intervention with respect to adult literacy, is presented in the Figure 2.1. Projections based on this model variant indicate that India will not achieve 100% literacy rate even by the year 2050. The maximum possible literacy rate in the 7+ years age population will be around 91% in 2050.

Figure 2.1: Projected Literacy Rate in India based on Simulation Model Variant I

Note: Age group specific Literacy Rates.

Source: Author's Projections.

Instead of presenting results of model Variants II and III which are about policy intervention in universalising school education and same is considered for Variant IV, we present the results of model Variant IV. The simulation model Variant IV is about policy intervention through adult literacy programmes targeting illiterates of 15-35 years age group only. The result presented in the Figure 2.2 indicate that although achieving 100% literacy rate even by 2050 is not possible, it can be improved through school education and adult literacy programmes for the 5-14 and 15-35 age group. The maximum possible literacy rate in the 7 + age population will be around 98%.

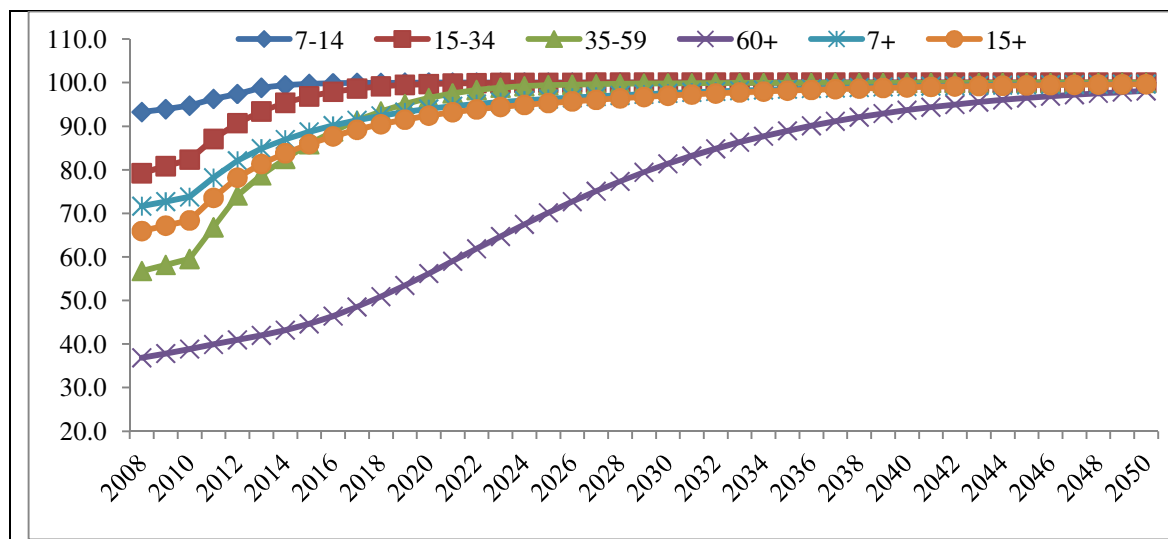
Figure 2.2: Projected Literacy Rate in India based on Simulation Model Variant IV

Note: Age group specific Literacy Rates.

Source: Author's Projections.

The simulation model Variant V is about policy intervention through adult education programmes targeting all the illiterate in the 15-60 years age population. The results presented in the Figure 2.3 indicate that 100% literacy rate possible by 2050. In this respect literacy levels have to be improved through school education for the 5 to 14 year age group and adult literacy programmes for 15 to 35 years and 35 to 60 years age groups.

Figure 2.3: Projected Literacy Rate in India based on Variant V Simulation Model



Note: Age group specific Literacy Rates.

Source: Author's Projections.

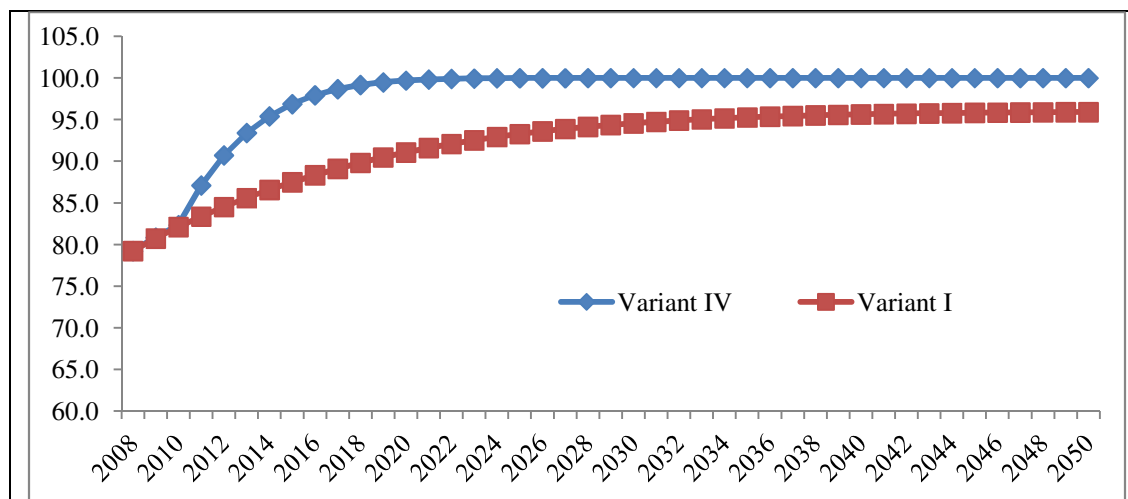
The trend in projected literacy rates in India for the 15 to 35 years age population based on the simulation model Variants I and IV is presented in the Figure 2.4. The illiterate population in the 15 to 35 years age will be the target age group for the adult literacy programmes in India. The projections with Variant IV simulation model indicate that when around 20% per year of the illiterates in the age group 15 to 35 years will be targeted under adult literacy programme and thus they will be made as literates, the literacy rate in this age group would be distinctively higher than the literacy rate projected with Variant I (under the condition that there will not be any new policy intervention for improving literacy rate in this age group). If the target of imparting literacy skills to the 20% of the illiterates in the 15 to 35 years age group per years will be made possible, by 2020 there is a chance of achieving 100% literacy rate in this age group in India.

Similarly, the trend in projected literacy rates for the 35- 60 years age group in India based on the simulation model Variant I, IV and V is presented in the Figure 2.5. The projections with Variant V simulation model indicate that when around 5% per year of the illiterates in the age

group 15-35 years will be targeted under adult literacy programme and thus they will be made as literates, the literacy rate in this age group would be distinctively higher than the literacy rate projected with Variant I and IV (under the condition that there will not be any new policy intervention for improving literacy rate in this age group). If the target of imparting literacy skills to the 5% of the illiterates in the 35 to 60 age group per year will be made possible, by 2020 there is a chance of achieving 100% literacy rate in this age group in India.

Having said, given the policy intervention through school education for the 5-14 years age group and adult literacy programmes for the 15-35 and 35 to 60 years age groups there will be improvement in the literacy rate in these two age groups. But the concern is what would be the improvement in overall literacy rate. The trend in projected literacy rates for the 7 + age group in India based on the simulation models Variant I, IV and V is presented in the Figure 2.6. It indicates the country, given the policy intervention, will achieve 100% overall literacy rate (for 7 + years age population) at least by 2050.

Figure 2.4: Projected Literacy Rate for 15-34 age group in India based on Variant I and IV Simulation Models



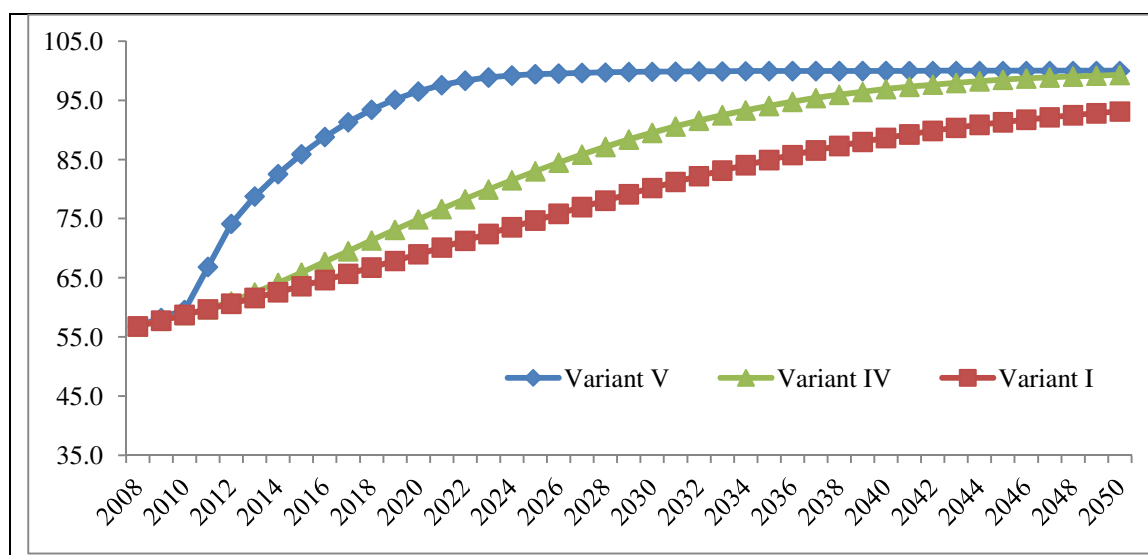
Note: Age group specific Literacy Rates.

Source: Author's Projections.

When the 20% illiterate population in the 15 to 35 years age and 5% illiterate population in the 35 to 60 years age will be the target age group for the adult literacy programmes and the school education programmes ensures 100% enrolment of 5 to 14 years age group and thus the 100% literacy rate among the 7 to 14 years age group in a few years ahead the overall

literacy (of 7 + year age population) will also be distinctively higher than the literacy rate projected with Variant I (under the condition that there will not be any new policy intervention for improving literacy rate in this age group).

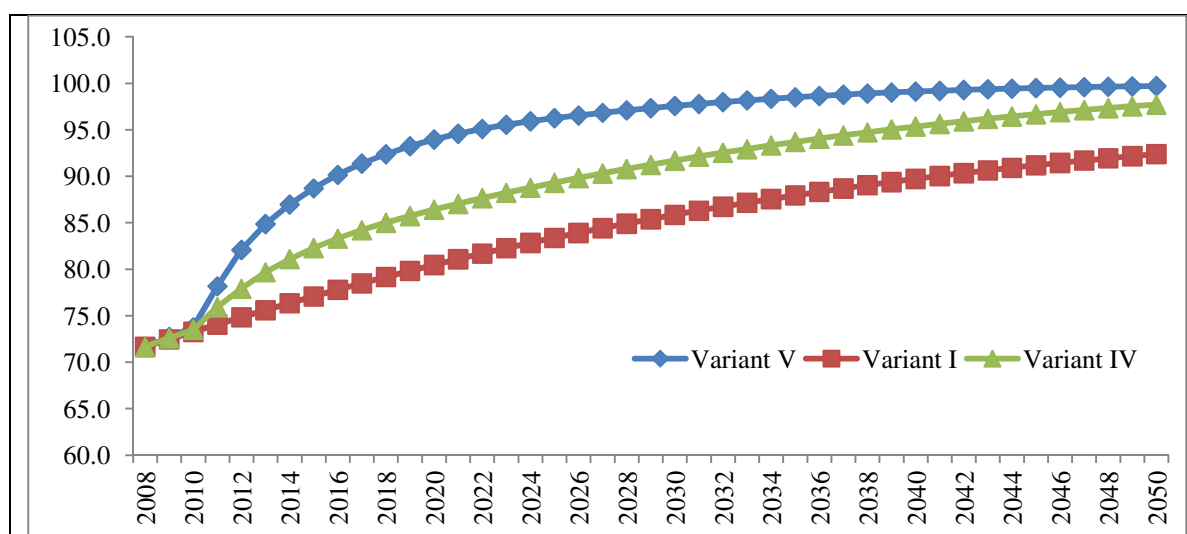
Figure 2.5: Projected Literacy Rate for 35-60 age group in India based on Variant I, IV and V Simulation Models



Note: Age group specific Literacy Rates.

Source: Author's Projections.

Figure 2.6: Projected Overall Literacy Rate (for 7+ age Population) in India based on Variant I, IV and V Simulation Models

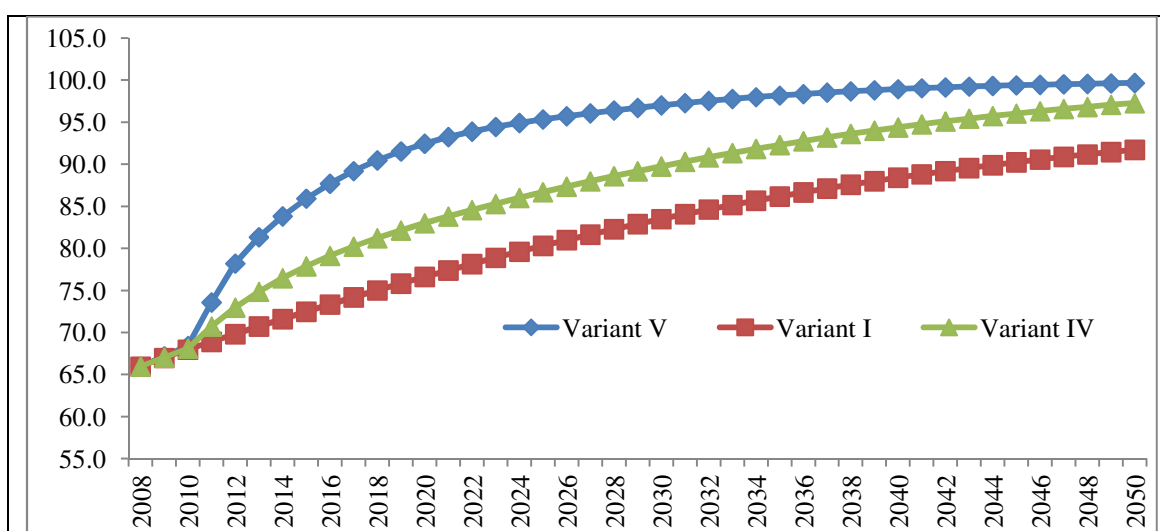


Source: Author's Projections.

Similarly the concern is about the adult literacy rate of the country. The trend in projected literacy rates among adults (i.e. for the 15 + years age group) in India till 2050 based on the

simulation model Variant I and IV is presented in the Figure 2.7. The adult literacy (of 15 + years age population) will be improved over that of the Variant I, with the policy intervention through adult literacy programmes.

Figure 2.7: Projected Adult Literacy Rate (for 15 + age Population) in India based on Variant I, IV and V Simulation Models



Note: Age group specific Literacy Rates.

Source: Author's Projections.

The projected literacy rate for India based on five variants of simulation models across age groups are summarised in the Table 2.2. It indicates that without any new policy intervention, the improvement in literacy rate will be very slow in the country. By 2050 it can achieve only 88% literacy rate. The improvement in literacy would be due to demographic change only. When the policy intervention through school education programmes ensures the 100% school attendance rate especially for 5-14 years age group and thus the 100% literacy rate in the age of 7 to 14 years, the overall literacy can be improved marginally when compared to that of the situation without any policy intervention with respect to adult literacy. It is because when the chance of becoming a literate is only possible through formal schooling and for the 7 to 14 years age groups and thus those crossing 14 years of age foregoes the chance of acquiring literacy skills. The chances of acquiring literacy skills through informal methods without any target adult literacy programmes meant for 15 + years age illiterates are very meagre. It takes time to the passage of the current 7-14 age cohort through different age groups.

Table 2.2: Prospects of Literacy Rate in India

Age Group / Model Variant	Base Year	Projections for the Year				
	2008	2015	2020	2030	2040	2050
<i>I</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
Variant I						
7-14	93.3	95.3	95.8	96.0	96.0	96.0
15-34	79.2	87.5	91.1	94.6	95.6	95.9
35-59	56.8	63.6	69.0	80.2	88.6	93.1
60 +	36.8	43.7	48.6	58.3	68.3	78.4
7 +	71.7	77.1	80.5	85.9	89.7	92.4
15 +	66.0	72.5	76.6	83.5	88.4	91.7
Variant II						
7-14	93.3	100	100	100	100	100
15-34	79.2	88.4	93.2	98.2	99.6	99.9
35-59	56.8	63.6	69.0	80.9	90.7	96.3
60 +	36.8	43.7	48.6	58.3	68.4	79.2
7 +	71.7	78.3	82.1	88.2	92.6	95.7
15 +	66.0	72.9	77.6	85.4	91.0	94.8
Variant III						
7-14	93.3	100	100	100	100	100
15-34	79.2	94.5	98	100	100	100
35-59	56.8	66.1	74.0	88.1	96.0	98.9
60 +	36.8	43.7	48.7	59.8	72.9	85.2
7 +	71.7	81.4	85.6	91.2	95.0	97.4
15 +	66.0	76.8	81.9	89.1	93.9	97.0
Variant IV						
7-14	93.3	100	100	100	100	100
15-34	79.2	96.9	100	100	100	100
35-59	56.8	65.9	74.9	89.5	96.9	99.3
60 +	36.8	43.7	48.7	59.7	73.6	86.3
7 +	71.7	82.3	86.4	91.7	95.4	97.7
15 +	66.0	77.9	83.0	89.8	94.4	97.3
Variant V						
7-14	93.3	100	100	100	100	100
15-34	79.2	96.9	100	100	100	100
35-59	56.8	85.9	96.5	99.8	100	100
60 +	36.8	44.6	56.2	81.4	93.7	98.1
7 +	71.7	88.7	94.0	97.6	99.1	99.7
15 +	66.0	85.9	92.5	97.0	98.9	99.7

Note: 1. Age group specific Literacy rate (percentage of literates to the population within the age group); 2. 2008 is the base year.

Source: Author's Estimates based on Simulation Exercise.

The policy intervention through adult literacy programmes can change situation and can improve the literacy levels among the adults where a large stock of illiterates lie. However, for the adult literacy programmes especially under the National Literacy Mission (NLM) illiterate population of 15-35 years age is the target age group. A large stock of illiterates who were not in this age group and crossed 35 years of age and entered into 35 + age population will remain as illiterates till their mortality.

III Need for Adult Education/Literacy Programmes

The projections indicate that unless there is a policy intervention India will not be achieving 100% literacy even by the end of the 21st Century. Hence, need for policy intervention through school education programmes and adult literacy programmes wherein latter is the need of hour for the improvement of adult literacy levels in the country. Literacy rates among the 7-14 age groups is reaching saturation point – about to reach 100% school attendance rate within few years ahead and thereby primary completion rate of 13-15 years age group. However, its contribution of younger age group's achievement to the overall or adult literacy is marginal, as there is a huge stock of adult illiterates who cannot undergo formal school education to become literate. Of course, there is a need for school education programmes in order to sustain the 100% enrolment and retention and thereby leaving no child being illiterate before he/she crosses 15 years. It takes long time (at least a century) to achieve 100% literacy rate in total population. It is possible when the 100% literacy of school age population sustained forever and this 100% literacy rate age cohort grows older and older.

To address the phenomenon of adult illiteracy, the policy intervention through adult literacy is a necessary condition. In this respect there have been initiatives at the global and national levels for a long time. In the Indian context, at the national level eradication of illiteracy has been a concern since independence. But most of the policy attention was on literacy through formal schooling only. The complementary nature of informal adult education programmes never attracted the policy attention. However, since mid-70s policy initiatives began, with the Non-Formal Education for the Youth in 1975 and the National Adult Education Programme in 1978. There were initiatives a few adult education programmes were implemented at national and state level but result was not encouraging due to various reasons (see Rambram, 1989). Thereafter establishment of the National Literacy Mission (NLM) in 1988 was an important policy intervention for liquidating the illiteracy.

The NLM has in fact three components in the Total Literacy Campaign (TLC), Post Literacy (PLP), and Continuing Education Programme (CEP). They are continuously interlinked programmes for improving adult literacy. The Total Literacy Campaign is to turn as many illiterate adults as to literates by motivating and facilitating the acquisition of basic literacy skills (reading, writing and numeracy). The Post Literacy Programme (PLP) is meant for retaining the literacy skills of the neo-literates. The Continuing Education Programme (CEP)

is meant for those have acquired literacy skills and retained with PLP and interested in further education and vocational education, occupational skills. Initially the implementation of NLM was selective and the success of the selective implementation ensured the scaling up of the Mission and turned into a massive programme.

However, the execution of NLM and implementation of its three-tier programmes resulted in a mixed outcome (see Rao, 1993; Banerjee, 1993 & 1994; GoI, 1994; Ghosh, 1997; Mishra, 1998; Saldanha, 1999; Karlekar, 2004). The NLM's initial strategy of implementing TLC at the district level with a wider public participation, on pilot basis in southern states observed to be successful (Ghosh, 1997). The success of the TLC faded away when it was scaled up to many other districts across states especially to educational backward states and region (Ghosh, 1997, Saldanha, 1999). Although one cannot ignore the success stories of the NLM in different parts of the country, its shortcomings have resulted in poor outcomes in general.

A promising and intrinsically good programme inflicted with serious weakness (GoI, 1994; Banerjee, 1994). The initial wider public participation was replaced with over bureaucratisation (Ghosh, 1997). The target obsessed bureaucratic implementation resulted in fudging the number of neo-literates (GoI, 1994; Banerjee, 1994). Many times it could not ensure adequate acquisition of literacy skills for the neo-literates (ibid). Further, there was a problem of relapse into illiteracy - the loss of newly acquired fragile literacy skills due to long delays between the initial literacy programs and the start-up activities of the PLP (Karlekar, 2004). Besides, there was a problem of loss of interest in continued learning because of a paucity of relevant materials in native languages and the lack of a perceived value for further education as a means of social and economic development (ibid). Such a problem of relapse into illiteracy led to fragility in literacy achievement through TLC (GoI, 1994; Banerjee, 1994). On the learners' point of view too, there was a failure of many adults to acquire initial literacy skills due to lack of perceived need, work schedules, or family needs (Karlekar, 2004).

Despite of all the weakness and problems, a numerous adults acquired initial literacy and a useful percentage did sustain and advance their literacy and education in post- literacy and continuing education (Karlekar, 2004). Besides, there were 'externality' and 'multiplier' effects of the literacy campaign (ibid). One of such externality of TLC is the social mobilization especially the women (Ghosh, 1997). One of such success stories is the women's mobilization as an unintended outcome of the TLC's literacy primer in Andhra

Pradesh. It began with a fight against distribution of arrack in a Village of Nellore district and had spread all over the state eventually resulted in the invocation of prohibition law in the state (Pattanaik and Reddy, 1993; Ghosh, 1997). In addition, the multiplier effect can be seen through increase in children's education and better health care behavior (Ghosh, 1997; Karlekar, 2004). Notwithstanding, the overall intended impact of the programme on improving the literacy rate in India was very meager. It might be due to problems of the programme in promoting and assessing the acquisition of initial literacy and the need for post- literacy and continuing education programmes to sustain literacy and promote continued learning and knowledge development (Karlekar, 2004).

The fanfare of NLM and its TLC activities in India, in the mean time, are subdued dormant state. The initial strategy of NLM transforming all the illiterates targeted into the neo-literates through TLC is a one-time initiative not on continuous basis. It was to graduate the literacy movement into the CEC level. The strategy of providing continuous education for the neo-literates is on a continuous basis. Despite the fact that many of the residual illiterates are still remained so and there is a fresh flow of illiterates too, many of the TLC and PLP centres in many states are removed. In contrast, there are a number of CEP centres in the country more than PLP and TLC centres. In fact CEP is transition phase evolves through TLC and PLP. What does the increasing presence of CEP centres and withdrawal of TLC and subsequently PLP centres indicate? Is it that the literacy moment in India has graduated from TLC to CEC? Had it the TLC initiative of the country achieved its goal? One may not get an answer but one can say there is a need for continuance of these adult literacy programmes in the country as a whole.

The simulation exercise that explored the prospects of literacy levels for India as a whole indicates that unless the policy makers of the country concentrates on improving adult literacy and thereby designs appropriates programmes especially for illiterates of both the 15-35 and 35 to 60 age groups and implements them rigorously, achieving 100% literacy rate in the country is simply not possible in the near future (even by 2050). Hence, what one can say based on the exercise is that there is a strong need for rejuvenating the National Literacy Mission (SLM) and revamped TLC and PLP adult literacy programmes. It is necessary if the policy making body in the country is intend to achieve 100% literacy rate in the near future. Moreover, there is a great need to target the 35 to 60 age group illiterates and even the older age illiterate population otherwise ignored so far, along with 15-35 years age group under the

adult literacy programmes in order to achieve 100% literacy rate in the country in the near future.

Literacy is an important factor for human development index (HDI) and ranking of countries based on the index. Education is one of the three components with one-third weight each involved in the computation of HDI. Adult literacy is one of the two sub-components and accounts two-thirds of weight in the education component. Improvements in adult literacy and child schooling can improve the human development ranking of India. Moreover, the marginalised and illiterates require the enabling skills of literacy to cope with the unprecedented changes in economic systems, such as globalisation, information and communication technology, and to be able to demand and benefit from equitable and democratic entitlements.

IV Concluding Remarks

The performance of India with respect to literacy rate in the developing world is relatively poor. The progress in the literacy rate especially during the last decade is decelerated when compared to that of the previous decade. There are rural-urban differences, gender gaps and social group disparities and regional variations across states in terms of literacy rate. Although disparities in literacy rate across these sub-population groups are getting narrowed over time, they still found to be considerably high. The recent policy initiatives with respect to primary schooling have reduced disparities in literacy rate among the young across states but the dearth of policy attention towards the historical trend of disparity in literacy rate among the adults, left it to continue. The initiative for improving literacy rate through informal/non-formal adult education programmes especially in the context of National Literacy Mission and its initiative of Total Literacy Campaign (TLC) yielded very poor results. Moreover, such an initiative has become ineffective over time in improving literacy rate. Finally, the prospects of India in meeting the EFA goal with respect to adult literacy are not so encouraging. It would require greater policy attention and better initiative for the improvement of adult literacy.

In this regard an attempt is made to explore the prospects of literacy rate in the India through simulation exercise. These simulation exercises indicate the impossibility of achieving 100% literacy rate in the near future for the country. But it can achieve 95% of literacy rate by 2050 if all the states can rigorously implement the adult literacy programmes for at least 5 years

period from 2012 for the age group 15 to 35 years age group covering all those illiterates in this age group. Moreover, if the adult literacy programmes can be extended to the 35 to 60 years group and implement the programme for at least 5 years period from 2012, India can achieve 100% literacy rate by 2050. It needs rejuvenating the National Literacy Mission (NLM) and revamped adult literacy programmes of TLC and PLP.

Therefore, achieving the goal of 100% literacy rate in the country depends on its policy intervention through adult literacy programmes, rigour in their implementation and their coverage. It is important because unless India improves its literacy levels remarkably, it will remain one of those poor performing countries at the global level in terms of human development index (HDI) and ranking of countries based it. Moreover, the marginalised and illiterates require the enabling skills of literacy to cope with the unprecedented changes in economic system in the context of emerging knowledge based economy and globalisation and to be able to demand and benefit from the equitable and democratic entitlements that they deserve.

* * *

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